EXHIBIT 8
DATE 2-12-07
HB 408

RUBBER
manufacturers
association

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February 12, 2007

Honorable Walter McNutt, Chairman
House Natural Resources Committee
Montana House of Representatives
P.O. Box 201706
Helena, MT 59620-1706

Dear Chairman McNutt:

On behalf of the Rubber Manufacturers Association I would like to submit this letter in opposition to HB 408 "An Act Prohibiting the Use of Tires, Slag, or Hazardous Waste in Heaters, Boilers, Furnaces, Kilns, or Incinerators Except for the Purposes of Destroying the Material."

The use of scrap tire-derived fuel is an accepted practice throughout the United States, as well as around the world. Tire-derived fuel is the largest, single market for scrap tires in the U.S. As of 2005, tire-derived fuel (TDF) was being used in 117 separate permitted facilities. Total annual TDF consumption was approximately 155 million scrap tires (2144.64 thousand tons). The level of TDF consumption in 2005 represents a 20 percent increase in the number of tires used as TDF since the end of 2003.

TDF is a well-regarded supplemental fuel used by a number of cement companies. In 2005, 17 cement companies in the U.S. consumed 58 million tires (about 802.0 thousand tons) as TDF in 78 cement kilns operating in 47 cement facilities. TDF also is used in Brazil, Canada, Japan, Mexico, France, the United Kingdom, Sweden, Switzerland, Germany, Spain and Portugal.

Tire-derived fuel is used in cement kilns as a replacement for coal. Tires are an excellent source of energy, containing 25 percent greater heating value than coal. Since the cement making process is an energy intensive process, tires can provide up to 25 percent of the fuel used in a kiln. Scrap tires also are a replacement for iron ore in the cement making process. The use of tires also supplies a source of iron, an essential component of the cement manufacturing process. Each passenger car tire contains two and one half pounds of steel, which is used in lieu of iron ore, consequently saving natural resources.

Tire-derived fuel also has been proven to lower emissions of nitrogen oxides, a greenhouse gas. This reduction is possible because tires contain very low amounts of nitrogen. When TDF is used in place of coal, a fuel source with a relatively higher amount of nitrogen, there is less nitrogen available to be oxidized, hence the reductions.

There have been many studies on the emissions from all facilities using TDF. On March 7, 2005 the US EPA finalized its Tire-Derived Fuel Fact Sheet (http://www.epa.gov/epaoswer/non-hw/muncpl/tires/tdf.htm). The fact sheet was a product of the Tire Derived Fuel subcommittee of the EPA Resource Conservation Challenge (RCC). The RCC is a voluntary, interactive and dynamic effort between government and industry to increase the level of recycling and other viable markets for a wide range of scrap materials. Scrap tires is one of these materials.

The EPA fact sheet on TDF states that EPA supports the highest and best practical use of scrap tires in accordance with the waste management hierarchy; in order of preference: reduce, reuse, recycle, waste-to-energy, and disposal in an appropriate facility. Disposal of scrap tires in tire piles is not an acceptable management practice because of the risks posed by tire fires, and because of the use of tire piles as a habitat by disease vectors such as mosquitoes. TDF is one of several viable alternatives to prevent newly generated scrap tires from inappropriate disposal in tire piles, and for reducing or eliminating existing tire stockpiles.

Based on over 15 years of experience with more than 80 individual facilities, EPA recognizes that the use of tire derived fuels is a viable alternative to the use of fossil fuels, and supports the responsible use of TDF in Portland cement kilns and other industrial facilities, provided the candidate facilities have developed a TDF storage and handling plan, and have secured a permit for all applicable State and Federal environmental programs and are in compliance with all requirements of this permit.

There are many misperceptions about the use of TDF, including allegations about the emissions from facilities when using TDF; facilities exceeding their permitted emission limits when using TDF and the impact on public health. Fortunately there have been a series of studies and reports from states and federal agencies that have reviewed and analyzed the emission data from facilities using TDF. The data conclusively states that the use of TDF, at worst, has no impact on a facility's emissions and at best has decreased the overall emissions of the facility. A health impact study conducted by the , Center for Disease Control, ATSDR "EVALUATING THE HEALTH EFFECTS OF BURNING TIRES IN A CEMENT KILN" concluded that the combined inhalation exposure to multiple chemicals being released from the cement kiln stack while burning fuel containing coal and 19% tires will not result in adverse health effects.

California, which is widely regarded as the state with the most stringent air emission limits in the country has six facilities using TDF. A report by the California Air Resources Board to the State Legislature concluded that "local air districts have determined that the levels of toxics emitted from these units when they burn the 10 percent tire and 90 percent coal fuel mixture do not constitute a significant increase in the health risk of the exposed public."

Scrap Tire Management in Montana

The current scrap tire situation in Montana is dire. Montana can account for only 10 percent of the state's approximately 900,000 annually generated scrap tires. While the Montana Department of Environmental Quality reports that Montana has 500,000 scrap tires in stockpiles, a more probable reality is that the state has several million tires unlawfully stockpiled.

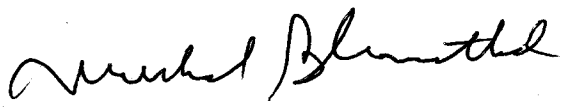
Additionally it is known that there are several hundred thousand scrap tires have been baled throughout the state. These baled tires, in their present form and with the current market infrastructure, have no value, are being stored in what is tantamount to stockpiling and have been banned by the Montana Department of Environmental Quality. In short, there is a total lack of large-scale, viable markets for the scrap tires generated in Montana. This situation, if left unmanaged, will ultimately result in a series of environmental problems that will quickly overwhelm the state's resources.

States that have disallowed TDF and have focused their market development program exclusively around ground rubber or civil engineering applications have failed to develop self-sustaining markets. Nebraska ended the use of TDF in favor of supporting the production of ground rubber. When the only ground rubber producer shut down the state found itself with no large-scale markets, just thousands of pounds of ground rubber in storage. The only exception has been Arizona, where most of the four million tires generated are converted into ground rubber and used in asphalt. Still, a significant number of Arizona generated tires are landfilled. The more successful state scrap tire programs have a market infrastructure that is based on TDF.

About the Rubber Manufacturers Association

The Rubber Manufacturers Association (RMA) is the national trade association in the U.S. for the rubber products manufacturing industry. The RMA is the national trade association representing more than 80 companies that manufacture various rubber products. These member companies include every major domestic tire manufacturer including: Bridgestone Americas Holding, Inc., Continental Tire N.A.; Cooper Tire & Rubber Company; The Goodyear Tire and Rubber Company; Michelin North America, Inc.; Pirelli Tire North America; Toyo Tire North America and Yokohama Tire Corporation.

Yours truly,



Michael H. Blumenthal
Senior Technical Director

U.S. Environmental Protection Agency

Management of Scrap Tires

Tire Derived Fuel

Scrap tires are used as fuel because of their high heating value. Using scrap tires is not recycling, but is considered a beneficial use - it is better to recover the energy from a tire rather than landfill it. In 2003, 130 million scrap tires were used as fuel (about 45% of all generated) - up from 25.9 million (10.7% of all generated) in 1991.

Tires can be used as fuel either in shredded form - known as tire derived fuel (TDF) - or whole, depending on the type of combustion device. Scrap tires are typically used as a supplement to traditional fuels such as coal or wood. Generally, tires need to be reduced in size to fit in most combustion units. Besides size reduction, use of TDF may require additional physical processing, such as de-wiring.

There are several advantages to using tires as fuel:

- Tires produce the same amount of energy as oil and 25% more energy than coal
- The ash residues from TDF may contain a lower heavy metals content than some coals.
- Results in lower NOx emissions when compared to many U.S. coals, particularly the high-sulfur coals.

Tire-Derived Fuel Frequent Questions

Background: Tire chips were used as a blended fuel at the Utilicorp United Power Plant in Sibley, MO. Visit Missouri's Division of Environmental Quality EXIT Disclaimer for more information.

EPA supports the highest and best practical use of scrap tires in accordance with the waste management hierarchy, in order of preference: reduce, reuse, recycle, waste-to-energy, and disposal in an appropriate facility. Disposal of scrap tires in tire piles is not an acceptable management practice because of the risks posed by tire fires, and because tire piles can provide habitats for disease vectors, such as mosquitoes.

In 2003, more than 290 million scrap tires were generated in the U.S. Nearly 100 million of these tires were recycled into new products and 130 million were reused as tire-derived fuel (TDF) in various industrial facilities. TDF is one of several viable alternatives to prevent newly generated scrap tires from inappropriate disposal in tire piles, and for reducing or eliminating existing tire stockpiles.

Based on over 15 years of experience with more than 80 individual facilities, EPA

recognizes that the use of tire-derived fuels is a viable alternative to the use of fossil fuels. EPA testing shows that TDF has a higher BTU value than coal. The Agency supports the responsible use of tires in portland cement kilns and other industrial facilities, so long as the candidate facilities: (1) have a tire storage and handling plan; (2) have secured a permit for all applicable state and federal environmental programs; and (3) are in compliance with all the requirements of that permit.

This information is also contained in a printable fact sheet on TDF [PDF File, 1 pg., 12 KB, About PDF].

Several industries use tires as fuel:

Cement Industry
Pulp and Paper Industry
Electric Utilities
Industrial/Institutional Boilers
Dedicated Tire-To-Energy Facilities

Cement Industry

About 53 million tires per year are consumed as fuel in US cement kilns. The cement industry burns scrap tires as fuel in kilns used to make clinker-a primary component of portland cement. A cement kiln is basically a large furnace in which limestone, clay, and shale are heated at extreme temperatures and a chemical reaction transforms them into clinker. Clinker is ground together with gypsum to form Portland cement.

Of the 130 million scrap tires used as fuel per year:

Cement industry - 41%
Pulp and paper mills - 20%
Electric utilities - 18%
Industrial/institutional boilers - 13%
Dedicated tire-to-energy facilities - 8%

- Rubber Manufacturers Association, 2004

The use of whole tires as kiln fuel is possible for some type of cement kilns. For these cement kilns, truck loads of whole tires, usually in enclosed vans, are delivered to the end of a conveyor. Tires are manually unloaded from the truck onto the conveyor. The conveyor feeds the tires to a mechanism that inserts one tire at a time into the kiln at specified time intervals. The advantage of utilizing whole tires is that there are no costs to create tire chips. The removal of the steel is unnecessary since cement kilns have a need for iron in their processes. Tire chips may also be utilized because there is very little manual labor involved in handling chips versus whole tires, however, producing chips from whole tires increase costs.

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Pulp and Paper Industry

About 26 million tires per year are consumed as fuel in boilers at US pulp and paper mills. Pulp and paper mills have large boilers which are used to supply energy for making paper. This energy is normally supplied by wood waste, however, wood varies substantially in heat values and moisture content, so the mills often supplement the wood fuel with other fuels, such as coal or oil, to make the operation more stable. TDF is also used in many plants as a supplement to the wood because of its high heat value and low moisture content.

The main problem in using TDF in the paper industry is the need to use de-wired tires. The wires often clog the feed systems. Also, the mills sometimes sell the resulting ash to farmers who require the ash to be free of iron. De-wired TDF can cost up to 50 % more than regular TDF.

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Electric Utilities

About 24 million tires per year are consumed as fuel in boilers at electric utilities. In the electric utility industry, boilers typically burn coal to generate electricity. TDF is often used as a supplement fuel in electric utility boilers because of its higher heating value, lower NOx emissions, and competitive cost as compared to coal. However, only certain types of boilers are conducive to burning TDF.

Cyclone boilers are the most used of all the utility boilers for burning TDF. They are good because they require no changes to be made to the boiler itself which reduces the capital investment. Therefore, the only additional equipment needed is a conveyer to transport the tire pieces into the boiler. Cyclone boilers cannot accept whole tires which increases the cost of obtaining the fuel (the optimum size of the tire pieces is 1 inch x 1 inch and it must be de-wired). Stoker fired units are also economical. In the stoker boilers, the residence time of the fuel is longer so larger tire pieces can be used. The optimum size of these pieces is 2 inches square. This reduces the cost of obtaining the fuel for Cyclone boilers and makes it more economical.

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Industrial/Institutional Boilers

Approximately 17 million tires per year are consumed in industrial boilers.

According to a Rubber Manufacturers Association survey in 2004, 19 industrial facilities were using TDF in their boilers to supplement their fuel usage. Industrial boilers are smaller than utility boilers and typically use a variety of fuels. When utilizing TDF, tires are typically shredded. Not all boilers are compatible with TDF. Clumping and clogging are common and preclude the use of TDF in many facilities.

Another impediment is the metal in the tires - if not removed before combustion, it ends up in the ash and can create disposal problems. Each facility must evaluate the impact of TDF on their air emissions and ash disposal. Industrial facilities must apply for the appropriate permits from their state and/or local regulatory authorities before commencing operation.

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Dedicated Tire-To-Energy Facilities

Approximately 10 million tires per year are consumed as fuel at dedicated tire-to-energy facilities. A dedicated tire-to-energy facility is specifically designed to burn TDF as its only fuel to create energy.

According to a Rubber Manufacturers Association survey at the end of 2003, there was only 1 dedicated tire-to-energy facility operating in the US. The dedicated tire-to-energy facility, Exeter Energy Limited in Sterling, Connecticut burns mainly whole tires and consumes 10 million tires per year. This facility serves as a major

scrap tire market for scrap tires in New York and northern New Jersey. The second dedicated tire-to-energy facility in the US is located in Ford Heights, Illinois and was not in operation at the end of 2003.

Even though dedicated tire-to-energy facilities have been demonstrated to achieve emission rates much lower than most solid fuel combustors, there are no known facilities under construction or consideration. The length of time and cost of construction, as well as the deregulation of the utility industry hinders further expansion of this industry.

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Tire-Derived Fuel Frequent Questions

Question 1. Why use tires as fuel when there are other ways to recycle scrap tires?

Answer: Tire-derived fuel (TDF) was the first market for scrap tires. From 1979 until 1992 TDF was the primary market for tires. Beginning in 1992, whole scrap tires were used as feedstock for ground rubber and processed tires were used in civil engineering applications. Based on over 15 years of experience with more than 80 individual facilities, EPA recognizes that the use of tire-derived fuels is a viable alternative to the use of fossil fuels (see EPA's TDF factsheet (PDF) 1pg., 12 KB, About PDF). In order to prevent tires from being stockpiled or disposed of in landfills, diverse markets need to be in place to handle the approximately 290 million scrap tires that are generated annually.

Scrap tire-derived fuel, or TDF, is used because of its high heating value. Compared to other commonly used solid fuels, the heating value is 25-50% higher than coal and 100-200% higher than wood. Facilities such as utility boilers, cement kilns, and pulp/paper mills use TDF as supplemental fuel in their energy-intensive processes. State and Federal studies have repeatedly shown that using tires to generate energy is environmentally sound when used in appropriate applications that ensure complete combustion, have proper air pollution controls in place, and conduct all required testing, monitoring, and other regulatory requirements. Furthermore, scrap tires that are removed from stockpiles only have two uses in the current markets: TDF and limited civil engineering applications. This is because, over time, tires in piles become contaminated with water, dirt and other debris. This "contamination" is generally what prohibits these tires from being used as feedstock for ground rubber.

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Question 2. What are the trends of scrap tires used as fuel versus other market applications?

Answer: In 1990, 25 million tires (which is about 11 percent of the total number of scrap tires generated) were used in TDF. This represented 98 percent of the market for scrap tires. Since 1992 the number of tires used as TDF has increased, but the percentage of the overall number of tires going to this market has decreased.

In 2003, 127 million tires were used as TDF, but represented only 44 percent of scrap tires going to market applications since other markets have developed.

Source: Rubber Manufacturers Association (RMA) EXIT Disclaimer
July 2004 RMA report "US Scrap Tire Markets - 2003 Edition."
EXIT Disclaimer

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Question 3. What are the benefits of using tires as fuel?

Answer: There are several benefits to using tires as fuel:

- Use of tire derived fuel (TDF) reduces the amount of fossil fuels that would otherwise be consumed.
- TDF is less expensive than fossil fuels.
- Diversion of tires from landfills reserves landfill capacity for other municipal waste and helps prevent scrap tire piles. Scrap tire piles pose risks because they provide habitat for disease vectors (such as mosquitoes and rodents), and because they can catch fire, creating large amounts of toxic smoke and hazardous liquids that can contaminate air, water and soils.
- Some state agencies suggest that cement kilns add TDF to their coal fuel in order to decrease emissions of oxides of nitrogen (NOx).
- TDF offers the potential advantage of decreasing emissions of oxides of sulfur (SOx) when used to replace high sulfur coal in cement kiln applications.
- In cement kiln applications, the ash resulting from TDF and coal combustion becomes an integral component of the product, eliminating the landfilling of ash.

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Question 4. How do stack emissions vary from facilities that use tire-derived fuel (TDF) versus conventional fuels?

Answer: EPA and state testing has shown that TDF produces emissions comparable to other conventional fuels. At well controlled facilities, emissions will not change significantly when TDF is used to replace some of the typical fuel used at the facility. It is important to note that there are variations from test to test at plants that don't use TDF, even when every attempt is made to hold operating conditions constant. Facilities have to meet regulatory limits when they use this fuel or other fuels and must demonstrate through compliance testing that they are achieving the applicable emission limitations.

The following statement is from an EPA research paper on use of TDF:

"TDF can be used successfully as a 10-20%

supplementary fuel in properly designed fuel combustors with good combustion control and add-on particulate controls, such as electrostatic precipitators, or fabric filters. Furthermore, a dedicated tire-to-energy facility specifically designed to burn TDF as its only fuel has been demonstrated to achieve emission rates much lower than most solid fuel combustors. No field data were available for well-designed combustors with no add-on particulate controls. Laboratory testing of a Rotary Kiln Incinerator Simulator (RKIS) indicated that efficient combustion of supplementary TDF can destroy many volatile and semi volatile air contaminants. However, it is not likely that a solid fuel combustor without add-on particulate controls could satisfy air emission regulatory requirements in the U. S".

Source: Air Emissions from Scrap Tire Combustion (PDF) (17 pp., 650 KB, About PDF), 1997

EPA and states are in the process of gathering stack test data from US plants using TDF in order to include in a comprehensive database. Emission sampling results from one cement kiln showed that carcinogenic risk declined when TDF was burned as a fuel.

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Question 5. What is the extent of dioxin/furan emissions from cement kilns or other facilities that use tire-derived fuel (TDF)?

Answer: Dioxin/furan emissions at cement kilns are primarily a function of exhaust gas temperature in the air pollution control device, which is typically either a fabric filter or electrostatic precipitator. EPA has previously determined that the type of fuel used (e.g., coal vs. alternative fuels) likely does not affect dioxin/furan emission rates. Regardless of the fuel used, cement kilns must comply with stringent limits on dioxin/furan emissions (0.2 ng TEQ/dscm or 0.4 ng TEQ/dscm and limited air pollution control device inlet temperature)[1]. Dioxin/furan emissions at cement plants can vary widely within the allowable range, regardless of whether TDF is used. Limited data suggests that use of TDF in cement kilns does not adversely impact dioxin and furan emissions. Note that when comparing measured dioxin/furan emission rates from the same source (both with and without TDF), the differences in measured emissions may be more attributable to measurement sensitivities and/or test-to-test variations in the factors that influence measured dioxin/furan emissions and not due to the use of TDF itself.

[1] *ng = nanograms; TEQ = toxicity equivalent quotient, the international method of relating the toxicity of various dioxin/furan congeners to the toxicity of 2,3,7,8-TCDD; dscm = dry standard cubic meters*

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Question 6. What are the emission and performance standards for facilities that use tire-derived fuel (TDF)?

Answer: The national emission standards for hazardous air pollutants (NESHAP) for the portland cement manufacturing industry (40 CFR 63 subpart LLL) apply to all Portland cement kilns (including those that burn TDF) except for those that burn hazardous waste. The NESHAP includes emission limits and monitoring requirements for the following pollutants emitted from Portland cement kilns: particulate matter (as a surrogate for hazardous air pollutants (HAP) metals), dioxins/furans, and total hydrocarbons (as a surrogate for organic HAPs, including polycyclic organic matter). Facilities must perform testing for these pollutants and must repeat the tests if any significant change is made to the raw material components or fuels fed to the kiln that could lead to an increase in emissions of dioxins/furans or particulate matter (e.g., when there is an increase in the input rate of TDF). This rule was promulgated in 1999, amended in 2002, and additional amendments were proposed in December 2005.

Boilers that burn TDF at major source pulp and paper manufacturing facilities are subject to the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR 63 subpart DDDDD). See the *Federal Register* notice for the final rule at 69 *FR* 55217. The NESHAP includes emission limits and monitoring requirements for particulate matter (as a surrogate for HAP metals) or total selected metals (fuel analysis for arsenic, beryllium, cadmium, chromium, lead, manganese, nickel, and selenium), hydrogen chloride, and mercury. Facilities must perform testing for these pollutants and must repeat the tests if they plan to exceed the maximum fuel feed rate (set during the initial compliance test) of any of the solid fuels that are burned (e.g., when there is an increase in the input rate of TDF). This rule was promulgated in 2004 and amended in 2005.

Cement Kiln Standards website
Regulations at 40 CFR part 63 subpart LLL. EXIT Disclaimer

Industrial/Commercial/Institutional Boilers standards website
Regulations at 40 CFR 63, subpart DDDDD EXIT Disclaimer

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Question 7. How is TDF regulated prior to processing?

Answer: Day-to-day management of the collection of scrap tires is regulated at the state level. In 1985, Minnesota enacted the first state law for the management of scrap tires. Currently, 48 states have enacted laws or regulations that address scrap tire management.

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Question 8. Have any standards been developed for the physical properties of tire-derived fuel (TDF)?

Answer: Yes, in 2001, the American Society for Testing and Materials (ASTM) developed the following standard for shredded (not whole) tire derived fuel: "ACTIVE STANDARD: D6700-01 Standard Practice for Use of Scrap Tire-Derived Fuel."

The following statement lists the scope of the TDF standard which is

quoted from the ASTM website:

"1. Scope
1.1 This practice covers and provides guidance for the material recovery of scrap tires for their fuel value. The conversion of a whole scrap tire into a chipped formed for use as a fuel produces a product called tire-derived fuel (TDF). This recovery practice has moved from a pioneering concept in the early 1980s to a proven and continuous use in the United States with industrial and utility applications.
1.2 Combustion units engineered to use solid fuels, such as coal or wood or both, are fairly numerous throughout the U.S. Many of these units are now using TDF even though they were not specifically designed to burn TDF. It is clear that TDF has combustion characteristics similar to other carbon-based solid fuels. Similarities led to pragmatic testing in existing combustion units. Successful testing led to subsequent acceptance of TDF as a supplemental fuel when blended with conventional fuels in existing combustion devices. Changes required to modify appropriate existing combustion units to accommodate TDF range from none to relatively minor. The issues of proper applications and specifications are critical to successful utilization of this alternative energy resource.
1.3 This practice explains TDF's use when blended and combusted under normal operating conditions with originally specified fuels. Whole tire combustion for energy recovery is not discussed herein since whole tire usage does not require tire processing to a defined fuel specification.
1.4 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use."

To access ASTM standards, visit the ASTM website. EXIT Disclaimer

The answers to these questions were reviewed for technical accuracy by the TDF Committee of the RCC Scrap Tire Workgroup.

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TNRCC INFORMATION

Waste Tire Recycling Program, Office of Permitting
September 1999

SUBJECT: # Air Emissions Associated with the Burning of Tire-Derived Fuel

Toxicological Review of Air Emissions Associated With the Burning of Tire Derived Fuel (TDF) Background:

More than 240 million scrap tires are generated annually in the United States. Used tire disposal is problematic, as tires are very resistant to degradation and are poorly compatible with landfilling. As a result, an estimated two billion scrap tires are currently stockpiled. In addition to providing breeding grounds for disease-carrying insects, these stockpiles have proven to be susceptible to spontaneous combustion and arson. Tire fires are difficult to extinguish, and their open uncontrolled burning has the potential to result in hazardous air emissions.

Although recycling opportunities are available, the market is currently insufficient to handle the large number of stockpiled tires. However, used tires have qualities which make them excellent alternative fuel sources for certain industries. Whole and shredded tires (known as tire-derived fuel, or TDF) have been used as a fuel source in European and Japanese industries for a number of years. In the United States, more than 30 states have adopted legislation recognizing TDF as an acceptable industrial fuel source. Due to their intensive fuel requirements, cement kilns, electric utilities, and pulp and paper mills have been the primary industrial users of TDF.

TDF Permitting in Texas:

To date, the TNRCC has permitted the combustion of TDF at six facilities, most of them cement kilns, in Texas. Although public concern has been expressed about the use of TDF at these facilities, the TNRCC believes that scientific evidence has demonstrated that tires can be safely burned for fuel provided proper emission control devices are used. The United States Environmental Protection Agency (USEPA) and other state environmental programs have reviewed the available data, and have reached the same conclusion.

Support for the burning of TDF is provided by extensive reviews of data from pilot studies and emission monitoring efforts nationwide. Independent of these studies, the TNRCC has also required smokestack testing for several facilities proposing to use tires as a fuel supplement in Texas. In addition, in order to address the concerns of local citizens, air and soil monitoring has been conducted in Texas communities located near facilities which burn TDF. The following sections summarize these studies and their conclusions with respect to the acceptability of TDF as an alternative fuel source.

USEPA and State of Ohio Reviews of TDF Trial Burns:

The USEPA and the Ohio Air Quality Development Authority have conducted separate reviews of air emissions data from various industries that were seeking permits to use TDF as a fuel source. Both reviews concluded that TDF could be burned in an environmentally sound manner, with overall emissions consistent with the burning of coal. In support of this conclusion, of all the electric utilities surveyed, the Oxford Energy facility in California (which burns 100% TDF) reported the lowest overall air emissions. USEPA was careful to recognize the importance of appropriate emission control devices when burning TDF. The USEPA review found that both electrostatic precipitators (ESPs) and baghouses (fabric filters) were effective in controlling emissions from the combustion of TDF. These types of controls are commonly required by the TNRCC in granting air permits to burn TDF.

USEPA Pilot Studies

The USEPA recently performed a pilot study in which tires were burned in a test incinerator without the aid of any emission control devices. Flue gases were analyzed for the 189 Hazardous Air Pollutants listed in the 1990 Clean Air Act Amendments (including criteria pollutants, metals, volatile/semi-volatile organic compounds, and dioxins/furans). The study concluded that, with the exception of zinc, there were no significant increases in air emissions when tires were substituted for coal. USEPA stated that the zinc emissions would have been effectively eliminated if an appropriate control technology had been used. It should be noted that emissions of certain compounds of concern (e.g., mercury) were significantly lower when burning tires relative to coal combustion.

TNRCC Smokestack Testing Requirements

As part of the air permitting process, the TNRCC has required smokestack testing on several cement kilns which were proposing to supplement with TDF. Analytical testing was performed for those compounds that were most likely to be emitted by the burning of TDF, and compounds of potential health concern (e.g., dioxins/furans). Emissions when burning TDF were consistent with emissions from coal burning, and were below levels of concern from a health standpoint.

TNRCC Ambient Air and Soil Monitoring Efforts

Based on facility design and data from the above mentioned studies, the TNRCC was confident that tires could be burned safely at the Texas Lehigh cement kiln in Buda. However, local citizens and environmental groups were uncomfortable with the use of this data in the TNRCC air permitting process. In order to address these concerns, TNRCC conducted ambient air monitoring downwind of the facility while the cement kiln was burning TDF. Those compounds most likely to be released by the burning of tires/fossil fuels were measured, including criteria pollutants, metals, volatile/semivolatile organics, and dioxins/furans. All compounds were either not detected or were measured at concentrations well below TNRCC health-based screening levels, or relevant state or federal standards. No adverse health effects would be expected to occur in association with exposures to the measured air concentrations.

One point that is often made with respect to air monitoring is that although every effort is made to characterize facility emissions, monitoring results are only reflective of the conditions at the time of sampling. Accordingly, questions have been raised about an inferred lack of knowledge about TDF emissions during non-typical conditions (e.g., upset conditions). Soil sampling efforts in and around the town of Midlothian have provided data that addresses these concerns.

Three cement kilns, including facilities which have burned hazardous wastes and TDF in addition to traditional fossil fuels, have been in operation in Midlothian for a number of years. Once emitted, persistent compounds of concern (e.g., metals, dioxins/furans) would be expected to deposit on local soils, where their stability would allow them to accumulate over time. As these soils are subject to any and all facility releases, contaminant levels will reflect TDF emissions under non-typical conditions, as well as contributions from other local sources and natural background levels. In Midlothian, the measured soil concentrations of all compounds of interest were generally consistent with natural background concentrations, and were below levels of health concern. Based on this data, air emissions associated with the TNRCC-permitted use of TDF do not represent a human health threat.

USEPA Indirect Risk Assessment- Midlothian

USEPA Region VI included considerations for the potential for local impacts associated with the burning of tires in conducting an indirect risk assessment on several facilities in Midlothian. Indirect risk assessments predict the movement of emitted chemicals through the environment, and are used to evaluate risks associated with human exposures to chemicals in local fish, beef, milk, crops, and other environmental media. In considering all of these routes of exposure, the USEPA risk assessment concluded that air emissions in Midlothian would not be expected to pose a health threat to local residents.

Conclusion:

A significant body of scientific data, provided by studies conducted by the TNRCC, USEPA, and other states, support the conclusion that TDF can be burned in an environmentally sound manner, provided proper emission control devices are utilized.

TNRCC INFORMATION

Waste Tire Recycling Program, Office of Permitting
September 1999

SUBJECT: # Using Tire Shreds for Tire Derived Fuel (TDF)

Many people are confused about the difference between a "burning tire" which emits black smoke and smelly vapors, and the use of scrap tires as a fuel source, or tire-derived fuel (TDF). The burning of used tires for fuel by industry is a safe and economical practice that has been approved by legislatures in more than thirty states. TNRCC has examined data based on experience at Texas facilities and also finds that TDF is a safe alternate fuel in appropriate situations. Holnam Texas Cement Company of Midlothian was the first facility to burn TDF in Texas. Because Texas had very limited data on TDF use at the time Holnam applied to burn used tires as fuel, TNRCC required the company to test for virtually every major contaminant expected to be generated by burning TDF. The company conducted smokestack testing for more than 50 contaminants. This testing, combined with testing at other cement kilns in other states and an EPA study, has produced extensive data regarding the use of TDF. The 1991 EPA study, which closely examined several tire-burning industrial sites outside of Texas, concluded that "With the proper emission controls, burning tires for their fuel energy can be an environmentally sound method of disposing of a difficult waste."

The TNRCC has a strong commitment to protecting the air, land and water of the state -- part of that commitment is the enforcement of air quality standards that are higher than the federal government requires. Facilities that use tires as fuel are constantly tested and monitored, just as every industrial facility in the state is required to meet air quality standards. In almost every case so far, the air emissions have been reduced when tires were substituted for part of the fuel. In those cases where air emissions were not reduced, they were still within the state's high standard of permitted levels.

In many ways, cement kilns, because of their high heat, are ideal places to use TDF. Because the ash is incorporated into the final product, there is no waste. Other types of facilities that can successfully use TDF include pulp and paper mills, metal foundries, and utilities. Testing and monitoring requirements are specific for each facility. Each cement kiln (or other facility) must, after being permitted, pass an initial compliance test to demonstrate that it will comply with the emissions limits and operating conditions written in the permit. Following satisfactory demonstration of compliance in the initial test, most kilns are equipped with Continuous Emission Monitors (CEMs) that take over monitoring. These CEMs ensure that the kilns are operating properly and are continuously demonstrating compliance with the permitted limits and conditions.

TDF is substituted on a proportional basis for coal as a fuel. Typically, TDF replaces 10-15% of the coal used. The proportion remains constant, and the TDF/coal mixture generally burns cleaner than coal alone.

GLOBALTOX

January 24, 2007

Mr. William D. Ring
Chief Executive Officer
Resource Recovery Fund Board, Inc. Nova Scotia
14 Court Street, Suite 305
Truro, Nova Scotia B2N 3H7

BY E-MAIL

Dear Mr. Ring:

Re: Review of the Report Entitled "*Air Emission Assessment for Proposed Tire Co-combustion, Lafarge Canada Inc. Brookfield, Nova Scotia Cement Kiln*", prepared by Conestoga-Rovers & Associates, dated January, 2007

Introduction

GLOBALTOX International Consultants Inc. (**GLOBALTOX**) was retained by the Nova Scotia Resource Recovery Fund Board, Inc. (RRFB) to review the air emission assessment prepared by Conestoga-Rovers & Associates (CRA) identified above. The CRA report discusses the expected changes in air emissions of substances that are predicted in the event that the Lafarge Canada Inc. (Lafarge) Brookfield, NS plant changes its fuel to include scrap tires. Further to your authorization to proceed with the review, we are pleased to present you with our comments based on a review of the CRA report.

Disclaimer

This letter-report was prepared by **GLOBALTOX** for the account of RRFB. The material documented herein reflects **GLOBALTOX**'s best judgment in light of the information available to **GLOBALTOX** at the time of preparation. Any use which a third party makes of this report, or any reliance on, or decisions made, by third parties based on this report are the responsibilities of such third parties. **GLOBALTOX** accepts no responsibility for damages, if any, suffered by any third parties as a result of decisions made, or actions taken, based on this report.

Opinion

Based upon information in the CRA report, the inclusion of waste tires in the Lafarge Brookfield, NS plant's fuel will have a negligible impact on air quality locally. This, in turn, leads GlobalTox to expect that the proposed change in fuel will have no discernible effect on the health of residents in the vicinity of the facility.

Although some parameters considered by CRA are expected to decrease and others may increase in concentration, all modeled concentrations at the nearest receptor would remain well below (two or more orders of magnitude below) the air quality criteria established to protect human health as referenced by CRA. This prediction is also consistent with the literature described in the CRA report, which indicates that numerous cement plants around North America that have used waste tires as fuel have had no difficulty in maintaining compliance with operating approval conditions.

Closure

If you have any questions or require clarification on any of the above material, please do not hesitate to contact the undersigned.

Yours sincerely,
GLOBALTOX INTERNATIONAL CONSULTANTS INC.

Ronald W. Brecher, PhD, C.Chem., DABT
Principal

AIR EMISSION ASSESSMENT FOR PROPOSED SCRAP TIRE CO-COMBUSTION

LAFARGE CANADA INC.
BROOKFIELD, NOVA SCOTIA CEMENT KILN

Prepared For:
Nova Scotia Resource Recovery Fund Board

Prepared by:
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JANUARY 2007
REF. NO. 047896 (1)

EXECUTIVE SUMMARY

This report presents the estimated impact on air emissions from co-combusting whole scrap tires in a cement kiln at the Lafarge Canada Inc. Brookfield, Nova Scotia cement plant as a supplemental fuel to displace a portion of the coal as a fuel source. The literature references and stack testing programs conducted for other cement kiln facilities that co-combust scrap tires at a rate of up to approximately 25 percent supplemental fuel (on a heat input basis) with coal indicate that the same compounds are emitted in relatively similar quantities and that in all cases environmental regulatory compliance limits are met. The primary factors influencing emission rates, with or without scrap tires, are combustion practices and air emission control systems. The Province of Quebec and numerous jurisdictions in the United States, Europe and Japan permit the co-combustion of scrap tires in cement kilns as a supplemental fuel source as a component of a scrap tire management program. The United States Environmental Protection Agency (USEPA) supports the use of tire-derived fuel (TDF) in cement kilns.

The air emission trends identified for co-combusting scrap tires in cement kilns are as follows:

- Zinc oxide is added to tires as part of the rubber vulcanization therefore zinc emissions may increase. Typical cement kiln emission control systems are able to remove particulate and associated zinc emissions and any increased zinc emissions should easily comply with applicable air quality standards;
- Co-combusting tires as a solid fuel starting mid-kiln can cause higher emissions of carbon monoxide (CO), however, again the increased emissions should easily comply with applicable air quality standards;
- Nitrogen oxides (NOx) emissions are reduced when the solid tire fuel is introduced mid-kiln by decreasing the thermal load and peak flame temperatures. NOx is one of the highest emission compounds from cement kilns and TDF provides a significant benefit in terms of emissions reductions for NO_x;
- The combination of high temperature, long residence time and turbulent air flow in a cement kiln promotes complete combustion of organic compounds and results in low emissions of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and, assuming proper operation, dioxins and furans, with or without the use of TDF. The literature reports only relatively minor variations (both up and down) of emissions of organic compounds when using TDF in a cement kiln and emissions always comply with applicable air quality standards; and
- Emissions of other compounds such as SO_2 and acid gases may vary slightly up or down with TDF co-combustion and are in compliance with air quality standards.

Potential environmental and community benefits associated with TDF co-combustion include:

- Cement plant kilns are often located near population centres with large waste tire quantities and tire disposal problems, providing efficient logistics;
- Year round consumption of tires in cement kilns can provide a consistent way of utilizing this energy source without stockpiling or landfilling and thereby preventing the risk of uncontrolled outdoor tire fires as well as eliminating breeding grounds for disease-carrying insects such as mosquitoes;
- Cement plant kilns are energy intensive, allowing consumption of up to 1,000,000 tires per year per kiln thereby reducing the amount of virgin fossil fuels required and conserving non-renewable resources;
- Energy cost savings of using scrap tires instead of coal can provide a competitive economic advantage and help to maintain jobs in the community through the viability of the cement plant, particularly given the widespread use of tires for this purpose in other jurisdictions; and
- Reinforcing wire from the whole tire is consumed as a replacement for purchased materials containing iron, a raw material used for making cement, again conserving non-renewable resources.

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